

# ATCO NEWSLETTER

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**July 2018**

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*The ATCO newsletter is the official publication of a group of amateur television operators known as “AMATEUR TELEVISION IN CENTRAL OHIO Group Inc” published quarterly (January, April, July, and October)*

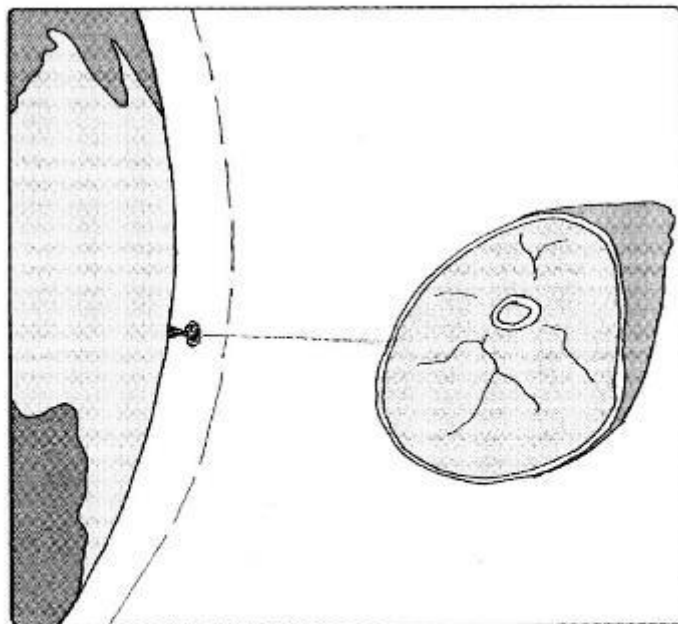
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## **ATCO SPOTLIGHT TOPIC**

Thanks to Beasley, K6BJH (SK) and ATVQ Magazine for allowing us to share his cartoons. For the complete book on “The Best of Beasley” go to the ATVQ Magazine web site (<http://atvquarterly.com/>) available for purchase.



Little known historical fact: On July 17, 1958, an explosion at an African meat packing plant, inadvertently launches the world's first ham satellite.

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## ACTIVITIES ... from my Workbench



Hello again, folks! Sure good it's raining outside cause otherwise, I'd be doing other things! "What" you may ask. Well, now that I think about it, a day at the computer isn't that bad after all.....as long as it isn't trying to fix computer problems. I sure hate it when something "breaks" with the computer because even fixing the most insignificant problem takes me at least a week to solve. Sometimes it isn't even an issue. There are times when I think I can make the computer perform better by upgrading something. **WRONG MOST OF THE TIME!!!** I keep telling myself that if it ain't broke, don't ever try to fix it! When will I ever listen to my inner self??? Oh, well.

Now, on to business. Let's see, what's happening? Well, first there's the issue of repairing both the Tx and Rx 70 cm repeater slot antennas. As soon as I get the polycarbonate radome material I ordered, I'll remove both of them, bring them home, install new radomes and test to verify performance. The 427/439 analog and 438 Rx operation will be shut down during that time but 423 digital Tx and 1268/1288MHz will remain to operate normally. I hope to restore normal operation one week after removal. I was hoping to install my spare Lindsay antenna during the repair process but it has a pattern issue that I can't solve. Besides, the **published** gain for a normal Lindsay is about 3 dB worse than the **tested** gain of the slot so it really didn't make any sense to try the Lindsay in the first place.

In fact, I may build a new slot antenna to replace the existing Lindsay antenna now installed for the 423 MHz digital transmitter. I trusted the published performance of the Lindsay when I first installed it and didn't test it. Now that I know how the Lindsay performs, a slot antenna will improve the Tx signal by at least 3 dB and eliminate the severe nulls it has every 180 degrees. **Now, the big question, does anyone out there know where I can get a piece of aluminum tubing 3 7/8" outside diameter and at least 10 feet long. Let me know if you can help!**

Next items...there are a number of minor improvements I'll attempt the next time I go to the repeater. First, I'm told the 449.975 audio input level is too low. That should be easy to fix. Next, I'm told the 147.48 input sensitivity is low. I know that and have tried to improve it before. Since the input is near the 146.76 CORC repeater output, it requires a double cavity filter with notches to reject the 146.76 signal. Maybe the filter needs some attention or maybe the GE receiver input circuit is out of tune. I'll check that. Last, I've got to rearrange things in the rack so I can accommodate the proposed MESH interface. The MESH equipment will allow us to upload bulletin board data saving extra work for Dale, WB8CJW, who now sends the signal from his QTH.

Also, sometime this summer I need to run a communication cable from the existing MESH antenna/transceiver down from it into the communication room. This seems simple but it involves penetrating the roof to pass the cable through. That's a BIG DEAL with SOT maintenance since other penetrations (not us) have resulted in roof leaks. Therefore, ALL roof penetrations will be done by approved professional workers. It'll cost us some but will be worth it.

That's about all the news for now. Oops, don't forget the Columbus Hamfest coming up soon. Also, review the bid items later in this Newsletter for the Ham items for sale. The proceeds go into our treasury so we can have "pizza parties."

...WA8RMC



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## XENIA ENJOYS SECOND SUCCESSFUL YEAR TO "DAYTON"

From ARRL Newsletter May 24 2018.

Hamvention® 2018 returned to the Greene County Fairgrounds and Expo Center in Xenia, Ohio, for a second year, earning high marks for attendance, the debut of many new Amateur Radio transceivers, and tasty food.

"Other than the rain showers Friday and Saturday, the event seemed to go very smoothly," said *QST* Editor Steve Ford, WB8IMY, who has been on hand for many past Hamventions. "Many attendees, great food, and a spacious layout that made it easy to get around. It is a *much* better venue than Hara," he added. Others who commented on the Hamvention Facebook page agreed, although some complained that the flea market area was too small, still muddy, and not as well attended as in past years, when the flea market *was* Dayton Hamvention. Many credited the Dayton Amateur Radio Association ([DARA](#)) for putting on a great show while still addressing needed improvements.



Ford said the rain, which included a Saturday thundershower, did not deter the crowds, although indoor exhibit areas were packed at times, reminiscent of the steamy traffic jams of the past at Hara Arena during wet weather.

ARRL EXPO, the focus of ARRL's Hamvention presence, saw considerable traffic, and visitors kept those tending the ARRL Store quite busy. Ford said attendees seemed to appreciate the ARRL Stage, where talks on various topics were presented throughout the show. ARRL Marketing Manager Bob Inderbitzen, NQ1R, said the ARRL team included nearly 100 people -- from Field Organization volunteers, Section Managers, Officers, Directors, Vice Directors, partners, served agency representatives, ARRL staff, and members who helped out.

Ford postulated that Hamvention 2018 may have witnessed a record number of new Amateur Radio products. New transceivers included Icom's IC-7610, Kenwood's TS-890S, Yaesu's FTDX-101D, and FlexRadio's FLEX-6400M and FLEX-6600M. CommRadio introduced its CTX-10, a compact SDR-based QRP transceiver. Other new products ranged from CW keys, to digital

mode interfaces, to audio processors and amplifiers. The August issue of *QST* will provide a roundup.

Alain De Carolis, K1FM, didn't let Hamvention curtail his ham radio activity. [Bob Inderbitzen, NQ1R, photo

Showers persisted into Saturday. "Hamvention's attempts to mitigate last year's mud issues in the flea market area seemed to help, although the relentless rain proved to be a challenge," Ford observed. "As a result, the indoor exhibits appeared to receive the lion's share of the traffic."

Perhaps as a result of the wet weather, Hamvention forums proved popular. For example, a nearly standing-room-only crowd to the RTTY Contesting forum heard ARRL Southwestern Division Vice Director Ned Stearns, AA7A, discuss FT8 as a possible replacement for RTTY in contest applications. Stearns has been involved in proving out FT8 DXpedition Mode. The ARRL membership forum also drew a substantial crowd. After comments by

President Rick Roderick, K5UR, Great Lakes Division Director Dale Williams, WA8EFK, addressed potential changes to the Amateur Radio Emergency Service® (ARES) program.



The skies cleared on Sunday, and bargain hunters flocked to the Fairgrounds. A number of exhibitors commented that it was the largest Hamvention Sunday attendance they'd seen in a long time.

Young attendees seemed to be in greater evidence this year, including teams of students interested in

combining Amateur Radio with robotics. For example, the [First Robotics](#) competition teams were on hand to demonstrate their creations.

The Yasme Foundation-sponsored "Ham Radio 2.0 -- Innovation and Discovery" area was a big hit, Yasme Foundation President Ward Silver, N0AX, said. "Subjects ranged from high-bandwidth satellite designs to Summits on the Air (SOTA), [HamSCI](#)'s 2017 Solar Eclipse QSO Party (SEQP) research, and QSLs." Silver said the goal was to help diverse groups meet and interact. Researcher Nathaniel Frissell, W2NAF, who staffed the HamSCI booth, reported "a tremendous response."

Florian Zwingl, OE3FTA, of Austria, and Koos Fick, ZR6KF, of South Africa represented the IARU Region 1 group Youngsters on the Air ([YOTA](#)), promoting YOTA in IARU Region 2 (the Americas). The YOTA "[Summer Camp](#)" will be held in August in South Africa -- when it's winter in the Southern Hemisphere.

"The weather notwithstanding, the mood was clearly upbeat. The open layout of the Xenia Fairgrounds drew compliments as attendees found it much easier to navigate than Hara Arena," Ford said. "The Dayton Amateur Radio Association also received kudos for their smooth management of the event. The food vendors drew rave reviews with delights ranging from standard carnival fare to ethnic cuisine."



**Hamvention 2018 Amateur of the Year Valerie Hotzfeld, NV9L, ARRL and American Red Cross volunteer, receives her award from Hamvention Awards Committee member Frank Beafore, WS8B.**



**Florian Zwingl, OE3FTA (left), and Koos Fick, ZR6KF, represented YOTA. [Ward Silver, N0AX, photo]**



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## COLUMBUS TV STATION SIGNALS DUE TO RELOCATE

Information obtained in part from Tim Feran at the Columbus Dispatch on June 8, 2018.

Over-the-air TV owners with antennas must get ready to rescan their television set. Within the next few years nearly 1,000 TV stations around the country, including four in Columbus, are voluntarily moving their current broadcast channel to another channel in a transition process.

The four Columbus stations moving are:

- Channel 34 WOSU-TV will move to channel 16 from channel 38.
- Channel 28 WTTE-TV will move to channel 27 from channel 36.
- Channel 6 WSYX-TV will move to channel 28 from channel 48.
- Channel 17 WDEM-CD will move to channel 24 from channel 17.
- Channel 10 WBNS will remain on channel 21.
- Channel 4 WCMH will remain on channel 14.

For a complete list of TV stations in Ohio, see [https://en.wikipedia.org/wiki/List\\_of\\_television\\_stations\\_in\\_Ohio](https://en.wikipedia.org/wiki/List_of_television_stations_in_Ohio)

The transition will take place in phases over the next two or so years as stations add new transmitters and erect new antennas. WTTE and WDEM are scheduled to transition by April ??? (That can't be right. WTTE and WSYX are located on the same tower) while WOSU and WSYX are scheduled to make the transition in early 2020.

The stations that are changing channels will notify consumers with daily on-air announcements for at least 30 days prior to any change.

Digital technology has meant that many TV stations already have been on channels that don't correspond to their familiar old numbers. But viewers didn't realize it because translators in digital TV sets have allowed those old numbers to appear onscreen, just as they always have.

The change is happening because the Federal Communications Commission held an auction from March 2016 through March 2017 in which TV broadcasters voluntarily gave up their current broadcast channels in exchange for a share of the financial proceeds from the auction.

The FCC held the auction so that commercial wireless service providers can have the necessary capacity to provide faster mobile broadband services.

Wireless providers ponied up \$19.8 billion in the auction, of which \$10.05 billion went to stations that were giving up their frequencies. More than \$7 billion from the auction is to be deposited to the U.S. Treasury for deficit

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## LOCAL HAM NEEDS HELP WITH SATELLITE DISH ALIGNMENT

I need to find someone who can properly aim a satellite dish. I have a Canadian satellite dish that needs to be re-aimed. **I'm more than willing to pay for the service.** Please contact me if you're willing to help. Thanks!

Andy / K2OO

614-633-9501

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## SPACE STATION DATV TRANSMITTER HAS FAILED

From ARRL Headquarters Newington, CT June 15, 2018

ARLS007 Space Station Digital Amateur Radio TV System Transmitter Determined to be Defective.

The Amateur Radio on the International Space Station (ARISS) "Ham Video" digital Amateur Radio TV (DATV) transmitter on the International Space Station (ISS) is reported to be defective, with onboard repair not possible. Also known as HamTV, the DATV system stopped working in mid-April, and a subsequent test on June 1 using a second L/S band patch antenna on the Columbus module had failed. ARISS-EU Mentor Gaston Bertels, ON4WF, said ARISS plans to return the transmitter to Earth for repair, pending space agency approvals and availability of ARISS funds.

"Schools and crew members performing educational ARISS school contacts are delighted to use Ham Video," Bertels said. "We will do the best we can to restart this service as soon as possible." Following extensive testing, the HamTV system was first used for an ARISS school contact in February 2016.

...Gaston Bertels

### *My detail follows:*

The transportation activity to get the HamTV unit down from ISS to ground can be a very time consuming and difficult process. Since the formal owner of HamTV is the European Space Agency (ESA) and ARISS, the first activity is to transfer ownership so NASA and Space-X can be used. This recently has been completed. Space-X 15 is presently docked at ISS until August 3 but finding room for the cargo is not possible because preparation time has expired. The next opportunity will be on Space-X 16 in October or Space-X 17 in early January 2019.

If Space-X 16 or 17 is used we will have until early April 2019 to repair it and prepare for a re-launch in May 2019. A lot depends upon what failed. If it is determined that it is a *simple* failure, re-certification will not be required. However, it is up to NASA and ESA to determine exactly what *simple* means. If re-certification is necessary, it could take a year or more to process. In addition, it is not known if repair parts will be available. It's possible to "cannibalize" one of the other 4 models to obtain necessary material but that may not be feasible because the spare models have not been certified for flight. It depends on the part needed.

Once back to earth, the failure needs to be studied closely. If it was due to cosmic or other bombardment, a simple replacement may not be advised because it too could fail after a couple of years. The ISS is located above earth below the Van Allen belt of radiation so it is not likely a failure of this nature was the cause but it's possible so an analysis could take some time. We'll just have to wait and see but realize that this could be no easy task.

In addition, it comes down to cost and who will pay for repair and re-launch efforts. That will be ironed out in the next few weeks. Since original work and ownership was done by ESA and Kayser Italiana (ESA's commercial designer/builder), we will need to coordinate efforts with them and provide the required funds for the work. They will do the actual work so transportation from Space-X's recovery point to the repair place in Europe has to be arranged. Also, it is talked about that import duties could be assessed because it will travel across country borders.

It's too bad that additional effort was not put into play originally. Officially, it is on record that if anything went wrong with the equipment that couldn't be repaired in the ISS, it would be jettisoned to burn up in the atmosphere. Additionally, of the five models built, only one of them was certified for flight so a backup could not be sent without a lengthy re-certification process that could take up to a year to certify.

So, I'm sure you see by now that this as a very complex task. We'll sort it out eventually. More detail later.

...Art. WA8RMC

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## **2018 COLUMBUS HAMFEST And OHIO SECTION CONFERENCE**

### **Saturday, August 4, 2018**

**Sponsored by:**

**The Voice of Aladdin Amateur Radio Club – W8FEZ**

**8:00am - 1:00pm Talk - In 146.760 – PL 123.0**

**(Doors open at 6:00am for vendor set-up)**

**Located at:**

**Aladdin Shrine Center 1801 Gateway Circle Grove City, Ohio 43123**

**(Behind Tee Jayes restaurant, off of Stringtown Road at I-71)**

**FORUMS:**

**Covering a wide range of fun and informative Amateur Radio topics!**

**VENDORS:**

**Universal Radio, and other vendors. See the website for our growing list.**

**V.E. Amateur Radio License Testing**

**Ohio Single Side Band Net (OSSBN)**

**Annual Meeting**

**For MORE Hamfest Information visit our Website <http://www.columbushamfest.com/>**

**Admission**

**Indoor Tables Outdoor Space**

**\$5.00 at the gate**

**\$10.00 per Table**

**\$10.00 per space**

**12 and under FREE**

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## **ARRL WANTS NON-AMATEUR SATELLITES OFF AMATEUR SPECTRUM**

ARRL Bulletin 13 ARLB013 >From ARRL Headquarters Newington CT July 11, 2018

ARRL wants FCC to facilitate bona fide Amateur Satellite experimentation by educational institutions under Part 97 Amateur Service rules, while precluding the exploitation of amateur spectrum by commercial, small-satellite users authorized under Part 5 Experimental rules. In comments filed on July 9 in an FCC proceeding to streamline licensing procedures for small satellites, ARRL suggested that the FCC adopt a "bright line test" to define and distinguish satellites that should be permitted to operate under Amateur-Satellite rules, as opposed to non-amateur satellites that could be authorized under Part 5 Experimental rules.

"Specifically, it is possible to clarify which types of satellite operations are properly considered amateur experiments conducted pursuant to a Part 97 Amateur Radio license, and [those] which should be considered experimental, non-amateur facilities, properly authorized by a Part 5 authorization."

ARRL said it views as "incorrect and overly strict" the standard the FCC has applied since 2013 to define what constitutes an Amateur Satellite, forcing academic projects that once would have been operated in the Amateur Satellite Service to apply for a Part 5 Experimental authorization instead. This approach was based, ARRL said, on "the false rational" that a satellite launched by an educational institution must be "non-amateur" because instructors were being compensated and would thus have a "pecuniary interest" in the satellite project. ARRL said well-established Commission jurisprudence contradicts this view.

ARRL told the FCC that justification exists to expand the category of satellite experiments conducted under an Amateur Radio license, "especially those in which a college, university, or secondary school teacher is a sponsor."

But, ARRL continued, a compelling need exists to discourage Part 5 Experimental authorizations for satellites intended to operate in amateur allocations by non-amateur sponsors, "absent compelling showings of need."

"There is no doubt but that Amateur Radio should be protected against exploitation by commercial entities, and there should be a compelling justification for a Part 5 Experimental license issued for a satellite experiment to be conducted in amateur spectrum," ARRL said. "A defining criterion for this latter category should be that there is no other spectrum practically available in lieu of Amateur Radio allocations."

ARRL noted that International Amateur Radio Union (IARU) policy regarding satellites operated in Amateur Radio spectrum is only to coordinate satellites where licensees and control operators are radio amateurs and having a "mission and operation" consistent with the International Telecommunication Union (ITU) Radio Regulations' definitions of the Amateur and Amateur-Satellite services.

Resolution 659, adopted at World Radiocommunication Conference (WRC) 2015, included protective language against non-amateur satellites operating in Amateur-Satellite spectrum, and the exclusion of any amateur bands from spectrum that might be considered at a future WRC for allocation to the Space Operation Service.

IARU announced in 2017 that it would no longer coordinate non-amateur satellite operations and adopted new satellite frequency coordination guidelines. Under that policy, educational and university satellites may be coordinated only when an identified amateur component exists, and the mission is to teach and train students in satellite communication and building and launching satellites. The individual responsible for the satellite's communications must be an Amateur Radio licensee. IARU will also continue to coordinate space stations operating under an amateur license and having "a clear amateur mission," as well as satellites where a licensing administration directs the use of an amateur band.

ARRL asserted that incorporating Amateur Radio in experiential learning using small satellites - e.g., CubeSats - is good for Amateur Radio, for students, and for the advancement of technology, and it urged the FCC to adopt a regulatory paradigm that encourages this approach.

AMSAT-NA also filed comments in the proceeding. The AMSAT remarks reflect several of the same concerns expressed by ARRL, including the suitability of authorizing certain satellites built by universities and non-profit organizations in the Amateur Satellite Service, and expressing opposition to satellites licensed as experimental under FCC Part 5 rules operating in the Amateur Satellite bands. Interested parties may file reply comments in the proceeding, IB Docket No. 18-86, by August 7, 2018.



## WESTERN ATVer SAYS "HI" TO ATCO

*From time to time, it's good to know what other ATVers are doing. Since Jim is actively involved in ATV module construction, it's good to see his shack and equipment. Jim describes it in the following article. Ed.*



**JIM - KH6HTV** Aloha from my summer time, Boulder ham shack. In the photo is the Hawaiian greeting "Shaka". I am a retired EE "snow-bird". When the snow flies here in Colorado - I fly to Maui, Hawaii for the winter. I have been experimenting with ham TV since the mid 70s along with Joe, AD0I. My main ham interest is ATV and more recently DTV with DVB-T. I also enjoy shooting videos of Janet's and my many vacation trips. I air these videos on our TV repeater. I also work HF. I prefer the digital mode BPSK-31.

This is my operating desk for ham radio, etc. The HF station consists of a Yaesu FT DX-3000 and a Heath SB-220 linear amp. I have a Dell all-in-one PC sitting next to the HF rig and it is dedicated to run the HF digital modes of BPSK-31, RTTY, FT-8, and SSTV. My main computer is an Apple MacBook Pro laptop with an extra monitor. Also on the desk is an HP PC laptop dedicated to streaming the TV repeater to BATC. The TV monitor in the center rear monitors the TV repeater's output 24/7. Also on the desk is an ICOM IC-2100, 2 meter, FM transceiver.



This is my electronics test bench. It contains a lot of analog TV test gear which I no longer use with DTV. The key test instrument is the Rigol spectrum analyzer.



These are my various TV transmitters. I use the Hi-Des HV-100EH (upper right) as my DVB-T modulator for 70cm, 33cm & 23cm. On top of it is a Hi-Des HV-110 TV receiver monitoring Ch 60 (441MHz). This receiver along with the HV-100 modulator and the model 23-11A, 23cm, RF Power Amplifier (top center) comprise the TV repeater's remote 70cm to 23cm remote receiver translator. Below the 23-11A, is my 23cm FM-TV modulator. The tan box below it is my 10 W, 70cm VUSB-TV transmitter. The bare aluminum box contains the up/down converter for 23cm DVB-T. The large rack mount unit on the bottom is a salvaged 2.4GHz TV transmitter I am using as an RF power amp. for 13cm DVB-T.

...KH6HTV



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## WILL THERE BE AN INTERNATIONAL ATV PARTY THIS YEAR?????

Hi Guys ....

The Melbourne ATV/DATV Repeater VK3RTV was de-commissioned at the beginning of this year after virtually continuous service since 1982. The Education Department of Victoria decided to dis-assemble the tower and associated buildings that housed our system.

We found a new home, albeit in the metropolitan area. It is the site through which in the past all analogue TV was funneled for further transmissions interstate. It is the highest point in the metropolitan area with a very good outlook. It is being re-furbished and will be the new home for the mobile telephone/radio branch of a major Telco. We should be able to gain access in early 2019. A big change will be that both input and output will need to be omni-directional. It's not the case from Mt Dandenong. Antennas will also need to be very discreet and low profile.

In the meantime, we're working on remote access via IP, a type of ATV IRLP, but not 2-way (at least yet). If all works out, we would be looking for someone to host a node in California and Ohio (and anywhere else). Reading the mail, I assume your numbers are dwindling as well as ours .... International could be a way of invigoration.

First things first and that's to get VK3RTV running again. As a result of the events earlier this year and the de-commissioning of VK3RTV, there'll be no DATV QSO Party from here, but hopefully next year bigger and better. ...From Pater Cossins on 7/12/18.

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## DO YOU WANT THIS ON YOUR VEHICLE?????



I saw this at Hamvention this year and couldn't resist taking a picture. The lady pictured is the wife of the owner. I did not interview her. I only assume she is a very supportive advocate of Ham Radio. I wonder if they have **his** and **hers** antennas?????



## HAMVENTION FRIDAY NIGHT ATV DINNER

Another year...another great time at the Hamvention Friday night ATV dinner. We had about 30 people attend this year, a few more than last year. We enjoyed the food at the China Buffet of both Chinese and conventional food items. After supper, there was a roundtable of discussions from all in attendance. We started at about 6PM and wrapped it up around 9:30 that night. That's plenty of time to get back to Columbus by 11PM.



Most attendees are pictured above. A few had to leave early.



...WA8RMC

## HAMVENTION SATURDAY ATV FORUM

The ATV Forum was again well represented and the facilities were exceptionally adequate. We had about 75-80 attendees this year down a bit from last year. However, there is a good reason. Last year a very significant storm erupted just before forum time so people came rushing in to escape the rain! It turned out we filled the room with over 100 people. This year, even though it was raining at the time, it wasn't a "gully washer" so more people stayed in the flea market.

The presentation list was as below:

10:45 - 10:50	Art Towslee	WA8RMC	Welcome statement and general comments.
10:50 - 11:00	Gordon West	WB6NOA	Warm up with fun and a couple of one liners.
11:00 - 11:20	Mel Whitten	K0PFX	Selecting, Buying and Building a Hi-Def Digital ATV
11:20 - 11:40	Rod Fritz	WB9KMO	Introduction to ATV and MESH.
11:40 - 11:45	Art Towslee	WA8RMC	Wrap up.



Gordon West  
WB6NOA



Mel Whitten  
K0PFX



Rod Fritz  
WB9KMO



## HAMVENTION ATV BOOTH ACTIVITY

We had an ATV booth this year at Hamvention as shown below. It was mainly supported by the ATN group in California but I held up the ATCO part with a banner of our own. I displayed my MiniTiouner-Express module and the ATN group displayed MESH information and ATVQ Magazine details. We had a great spot with a lot of traffic so there were a lot of potential customers. See pictures below of our setup.





## ATCO SPRING EVENT REPORT

First order of business for the ATCO 2018 spring event was -- lunch! Attendees enjoyed Yogi's Hoagies and nice selections from City Barbecue along with an assortment of soft drinks. Thanks as always to Art, for ordering and picking up the food!

After eating, Art kicked things off with a welcome and introduction, and each person around the room introduced themselves as well. There were 19 sign-ins and possibly a few extra visitors.

Thanks, were given to Dale, WB8CJW, for frequent resets and maintaining of the bulletin board and other support. Also recognized was Ken, W8RUT, for use of the nice facilities at ABB for the event.

A couple folks recognized Ron AE6QU, a club member, previously of Arizona, is moving to the Dayton area. Well, Ron, meet Dave, AH2AR, who was visiting from DARA (Dayton) and seems to be the sole ATV participant at this time, so hopefully he'll have another ATV enthusiast in the greater Dayton area now!

Seamus Bonte KE8GTT made a nice presentation discussing several related topics:

- Auxcomm
- AREDN
- MESH (802.11n)
- applications using MESH

Art had a brief discussion on DVB receivers and transmitters; transmit using Lime board (-S&-T), Pluto board (-S); also had a discussion on the new DVB-S/S2 receiver "MiniTiouner-Express" now available, discussing features and software for it. Art supplied a couple of handouts for those interested, with more details.

Art also discussed ATV quarterly and mentioned the publisher change, among other points. He also mentioned a good writeup (*already or yet to come...? Mark*) in ATVQ about ATCO linking MESH video to their repeaters.

Moving on to the donated Kenwood TS-520 and accessories up for bid...Joe, KC8YPD, won the bid and picked up the unit. Congratulations, Joe!

Last but certainly not least...came the drawing for door prizes. There was a 12v power strip, field strength meters, many brand-new component parts donated by Phil, W8MA...thanks to all the other donors and that wrapped up another Event.

Respectfully submitted,

...C. Mark Cring, N8COO ATCO Club Secretary



## SILENT KEY

It is with deep regret that I report the passing of Paul Wiese, WA8YDC. Paul owned AVCOM, the company that assembles the DATV-Express and MiniTiouner-Express printed circuit boards. He was a good friend of mine and great business person. We mourn his loss and send out our best thoughts to his family.

I have been asked by the family to help find “good homes” for Paul’s equipment. Since many pieces are HF in nature, I’ve asked the guys from the Central Ohio Radio Club (CORC) to help.

The items listed below are known to be operational but there are no guarantees. I will take back and refund the purchase price if the equipment is found to be defective. These items are at my house so if you’d like to inspect them, you are welcome to do so. Everything is set up in working position so if you’d like to test an item, it can be operated “on the air”. Please call me at 614-891-9273 first.

Bids will be accepted via E-mail at [towslee1@ee.net](mailto:towslee1@ee.net) or snail mail at 438 Maplebrooke Drive West, Westerville Ohio 43082. Please refer to the item by its number in the pictures below. Bids will stay open until one week after the CORC group sends out their Newsletter in September. WA8RMC

### 1. Standard Radio 2m FM radio.

Model SR-C826M. Has crystals inside for up to 12 channels. Does not appear to work for Tx. Neat whip antenna attached. Original manual.



### 2. Alinco Model DR-1200 2m FM mobile radio.

Output power 25 watts. Frequency 144 to 148MHz. Includes microphone but no mtg. bracket. Manual included.



**3. TYT Model TH-UV8000SE Tri band hand held radio.** 136-174/ 220-260/400-520MHz. 10W output. Includes charger & stand. Orig. box W/manual.



### 4. HY-GAIN Model CD-45-II rotor/control Box.

With mounting plate for Rohn 25G tower. Original manual.





**5. ASTRON Model RS-35A POWER SUPPLY.**  
12-14VDC output at 35 amps.



**6. MFJ Model MFJ-815B SWR/WATTMETER.**  
1.8-30 MHz 2KW max. SWR 1:1 - 5:1. W/manual.



**7. KENWOOD SM-230 STATION MONITOR.**  
Bandscope /spectrum analyzer and signal monitor.  
10 MHz Signal oscilloscope. Companion to TS-870.



**8. KENWOOD TS-870 HF TRANCEIVER.**  
160-10M. 100W max. output. 12VDC 20 amps. DSP  
built in. Kenwood MC-90 mike & Orig. schematics.



**9. RAYTRACK Model DX2000L LINEAR Tx.**  
2000W out max SSB. Uses (2) 3-500 tubes. Tested  
output 1000W CW. Mfg. in 1980. Orig. manual. This  
is similar to Drake unit. Works with TS-870



**10. KENWOOD Model SP-31 SPEAKER.**  
Hi & Lo audio filters for 400-3000Hz. 8-ohm input.  
2 watts max. Unfiltered freq. resp. is 160Hz-7KHz.  
2 audio source selection switch.



**11. BENCHER RJ-2 STRAIGHT KEY.**

Chrome base. Ball bearing pivots. Cable with 3.5MM plug. Like new condition.



**12. BENCHER ST-2 PADDLE KEYER.**

Chrome base. Single lever paddle. Cable with 1/4" phone plug. Like new condition.



**13. VIBROPLEX VIBROKEYER DELUXE.**

Single lever paddle keyer. Jeweled spring-loaded pivots. Chrome top parts and base.



**14. DRAKE Model TV-1000 LO PASS FILTER.**

1000 Watt Max. Use for freq. below 30MHz. RG8 two-foot cable with SO239 connector



**15. MFJ Model MFJ-486 MEMORY KEYER.**

Grandmaster II unit. Includes "Ham-Key" paddle keyer and single key. 12VDC input. W/manual.



**16. MICRONTA FIELD STR./SWR METER.**

RANGE: 1 TO 1000 WATTS. SWR 1:1 to 3:1. Frequency: 3-30MHz.





**17. KENWOOD Model TH-75A HANDI-TALKIE**  
Dual band 144/420MHz. With Kenwood KSC-14 dual charger and BC-9 wall charger. Includes (1) PB-6x 1600mAh & (2) PB-8xt 2000mAh batteries.



**18. MFJ 4 PORT MANUAL COAX SWITCH.**  
4 position switch with lightning arrestor. Rated 2.5KW. SO239 unused connections are grounded.



**19. DUMMY LOAD. "Cantenna type".** Rating up to 1KW. In 1 gallon can with oil. No markings. Product type unknown. 2 ft. RG8 Cable W/SO239.



**21. HUSTLER Model 4-BTV VERTICAL ANTENNA.**

(no picture)

Four band trap vertical omnidirectional antenna for 10 thru 40 meters. Mount on roof or pipe at ground level with addition of radials. Unit is dis-assembled and marked for re-assembly. Rated for 1KW operation.

**22. CUSHCRAFT Model A3S 3 EL. BEAM ANTENNA.**

(no picture)

20-15-10 Meter 3 element horizontal beam antenna.

(With addition of a clamp-on A743 add-on kit, 40 meters is covered). Beam is completely dis-assembled and all elements clearly marked with position markings for easy re-assembly without disturbing calibration.

**20. DIAMOND X200A VERTICAL ANTENNA.**  
144-146MHz 6dB gain. 440-450MHz 8dB gain.





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## LOCAL HAMFEST SCHEDULE

This section is reserved for upcoming Hamfests. They are limited to Ohio and vicinity easily accessible in one day. Anyone aware of an event incorrectly or not listed here; notify me so it can be corrected. This list will be amended, as further information becomes available. To see additional details for each Hamfest, Control Click on the blue title and the magic of the Internet will give you the details complete with a map! To search the ARRL Hamfest database for more details, CTL click [ARRLWeb: Hamfest and Convention Calendar](#) ... WA8RMC.

### 07/21/2018 | [GARS Germantown Hamfest](#)

**Location:** Germantown, OH

**Type:** ARRL Hamfest

**Sponsor:** Germantown Amateur Radio Society (GARS)

**Website:** <http://GARSohio.org>

### 07/21/2018 | [NOARSFEST](#)

**Location:** Elyria, OH

**Type:** ARRL Hamfest

**Sponsor:** Northern Ohio Amateur Radio Society

**Website:** <http://noars.net>

### 07/22/2018 | [Van Wert Hamfest](#)

**Location:** Van Wert, OH

**Type:** ARRL Hamfest

**Sponsor:** Van Wert Amateur Radio Club

**Website:** <http://w8fy.org>

### 07/29/2018 | [Portage Hamfair '18](#)

**Location:** Ravenna, OH

**Type:** ARRL Hamfest

**Sponsor:** Portage Amateur Radio Club

**Website:** <http://hamfair.com>

### 08/04/2018 | [2018 Columbus Hamfest](#)

**Location:** Grove City, OH

**Type:** ARRL Hamfest

**Sponsor:** Voice of Aladdin Amateur Radio Club (W8FEZ)

**Website:** <http://columbushamfest.com>

### 08/12/2018 | [Cuyahoga Falls Hamfest](#)

**Location:** Stow, OH

**Type:** ARRL Hamfest

**Sponsor:** The Cuyahoga Falls Amateur Radio Club

**Website:** <http://www.cfarc.org/tailgate.php>

### 09/09/2018 | [Findlay Hamfest](#)

**Location:** Findlay, OH

**Type:** ARRL Hamfest

**Sponsor:** Findlay Radio Club

**Website:** <http://www.findlayradioclub.org>

### 09/22/2018 | [OH-KY-IN ARS Hamfest](#)

**Location:** Cincinnati, OH

**Type:** ARRL Hamfest

**Sponsor:** OH-KY-IN Amateur Radio Society

**Website:** <http://www.ohkyin.org>

### 09/23/2018 | [Cleveland Hamfest and Computer Show](#)

**Location:** Berea, OH

**Type:** ARRL Hamfest

**Sponsor:** Hamfest Association of Cleveland

**Website:** <http://www.hac.org>

### 10/11/2018 | [Microwave Update 2018 Convention](#)

**Location:** Fairborn, OH

**Type:** ARRL Convention

**Sponsor:** Midwest VHF/UHF Society

**Website:** <http://www.microwaveupdate.org>

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## TUESDAY NITE NET ON 147.48 MHz SIMPLEX

Every Tuesday night @ 9:00PM WA8RMC hosts a net for the purpose of ATV topic discussion. There is no need to belong to the club to participate, only a genuine interest in ATV. All are invited. For those who check in, the general rules are as follows: Out-of-town and video check-ins have priority. A list of available check-ins is taken first then a roundtable discussion is hosted by WA8RMC. After all participants have been heard, WA8RMC will give status and news if any followed by late check-in requests or comments. We usually chat for about ½ hour so please join us locally or via internet at [http://www.batc.tv/ch\\_live.php?z=1&id=1049&ch=2](http://www.batc.tv/ch_live.php?z=1&id=1049&ch=2).

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## ATCO TREASURER'S REPORT - de N8NT

OPENING BALANCE (04/20/18) .....	\$ 1439.38
RECEIPTS(dues).....	\$ 230.00
Kenwood sale.....	\$ 175.00
Spring Event food.....	\$ (153.96)
PayPal fees.....	\$ (1.77)
Postage.....	\$ ...(8.52)
CLOSING BALANCE (7/22/18) .....	\$ 1680.13

# ATCO REPEATER TECHNICAL DATA SUMMARY

Location:	Downtown Columbus, Ohio	
Coordinates:	82 degrees 59 minutes 53 seconds (longitude) 39 degrees 57 minutes 45 seconds (latitude)	
Elevation:	630 feet above the average street level (1460 feet above sea level)	
TV Transmitters:	423.00 MHz DVB-T, 10 W contin, FEC=7/8, Guard=1/32, Const=QPSK, FFT=2K, BW=2MHz, PMT=4095, PCR=256, Video=256, audio=257 427.25 MHz Analog VSB AM, 50 watts average 100 watts sync tip (cable channel 58) 1258 MHz 40 watts FM analog 1268 MHz DVB-S QPSK 20W continuous. SR=3.125MS, FEC=3/4, PMT=32, Video=162, Teletext=304, PCR=133, Audio=88, Service =5004) 2397 MHz Mesh Net transceiver 600mw output (channel 1 -2). ID is WR8ATV-2 10.350 GHz: 1 watt continuous analog FM	
Link transmitter:	446.350 MHz: 5 watts NBFM 5 kHz audio. This input is used for control signals.	
Identification:	423, 427, 1258, 1268 MHz, 10.350 GHz transmitters video ID every 10 min. with active video and information bulletin board every 30 minutes. 423 MHz digital, 1268 MHz digital & 10.350 GHz analog - Continuous transmission of ATCO & WR8ATV with no input signal present.	
Transmit antennas:	423.00 MHz - 8 element Lindsay horizontally polarized 6dBd gain "omni" 427.25 MHz - Dual slot horizontally polarized 7 dBd gain "omni" major lobe east/west, 5dBd gain north/south 1258 MHz - Diamond vertically polarized 12 dBd gain omni 1268 MHz - Diamond vertically polarized 12 dBd gain omni 2397 MHz - Ubiquiti dual polarity omni 13dBi gain slot for channel 1 -2 MESH Rx/Tx operation 2397 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (Used for experimental Mesh operation) 10.350 GHz - Commercial 40 slot waveguide slot horizontally polarized 16 dBd gain omni	
Receivers:	147.480 MHz - F1 audio input with touch tone control. (Input here = output on 446.350) 438.000 MHz - DVB-T QPSK, 2K BW. Receiver will auto configure for FEC's and PID's. (Input here = output on all TV transmitters) 439.250 MHz - A5 NTSC video with FM subcarrier audio, <b>lower sideband</b> . (Input here = output on all TV transmitters) 449.975 MHz - F1 audio input aux touch tone control. 131.8 Hz PL tone. (Input here = output on 446.350). 1288.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) 1288.00 MHz - DVB-S QPSK digital SR=4.167MSPs, FEC=7/8. PIDs: PMT=133, PCR=33, Video=33, Audio=49 (Input here feeds all TV transmitters and also goes directly to 1268 MHz DVB-S digital output channel 2.) 2398.00 MHz - F5 video analog NTSC. (Input here = output on all TV transmitters) (inactive at this time because of MESH on 2397) 10.450 GHz - F5 video analog NTSC. (Input here = output on all TV transmitters)	
Receive antennas:	147.480 MHz - Vert. polar. Diamond 6dBd dual band (Shared with 446.350 MHz link output transmitter) 438.00/439.250 MHz - Horizontally polarized dual slot 7 dBd gain major lobe west (Shared with 438 & 439 receivers) 1288.00 MHz - Diamond vertically polarized 12 dBd gain omni (shared with analog and DVB-S receivers) 2398.00 MHz - Comet Model GP24 vertically polarized 12 dBd gain omni (inactive at this time because of MESH on 2397) 10.450 GHz - Commercial 40 slot waveguide horizontally polarized 16 dBd gain omni	
Auto mode	Touch Tone	Result (if third digit is * function turns ON, if it is # function turns OFF)
Input control:	00*	turn transmitters <b>on</b> (enter manual mode-keeps transmitters on till 00# sequence is pressed)
	00#	turn transmitters <b>off</b> (exit manual mode and return to auto scan mode)
	264	Select Channel 4 Doppler radar. (Stays on for 5 minutes) Select # to shut down before timeout.
	004	Select 10.450 GHz receiver. ( <b>Always exit by selecting 001</b> )
	003	Select room camera ( <b>Always exit by selecting 001</b> )
	002	Select roof camera. Select room cam first then 002 for roof cam. ( <b>Always exit by selecting 001</b> )
	001	Select 2398 MHz receiver then 00# for auto scan to continue
Manual mode	00* then 1 for Ch. 1	Select 439.25 analog /438 digital receiver (if video present on digital, it is selected. Otherwise analog)
Functions:	00* then 2 for Ch. 2	Select 1280 digital receiver
	00* then 3 for Ch. 3	Select 1280 analog receiver
	00* then 4 for Ch. 4	Select 2398 receiver
	00* then 5 for Ch. 5	Select video ID (17 identification screens)
	01* or 01#	Channel 1 439.25 MHz scan enable (hit 01* to scan this channel & 01# to disable it)
	02* or 02#	Channel 2 1288 MHz digital receiver scan enable
	03* or 03#	Channel 3 1288 MHz analog receiver scan enable
	04* or 04#	Channel 4 2398 MHz scan enable
	A1* or A1#	Manual mode select for 439.25 receiver audio
	A2* or A2#	Manual mode select for 1288 digital receiver audio
	A3* or A3#	Manual mode select for 1288 analog receiver audio
	A4* or A4#	Manual mode select for 2398 receiver audio
	C0* or C0#	Beacon mode – transmit ID for twenty seconds every ten minutes
	C1* or C1#	C1* to turn off 438 MHz DVB-T Tx, C1# to enable it (Must be in manual mode to enable this function).
	C2* or C2#	C2* to turn off 423 MHz DVB-T Rx, C2# to enable it (Must be in manual mode to enable this function).

**Note: The DVB-T Tx and Rx units can lock up when they lose video or see bad video. When this happens, power must be cycled. To do this select C1\* or C2\* to turn off power. A few seconds later select C1# or C2# whichever appropriate to restore power to selected unit. Wait about 15 to 30 seconds to see restored operation. (Example: To reset the DVB-T receiver enter C2\*, wait a few seconds then C2#)**

## ATCO MEMBERS as of July 2018

<u>Call</u>	<u>Name</u>	<u>Address</u>	<u>City</u>	<u>St</u>	<u>Zip</u>	<u>Phone</u>
KD8ACU	Robert Vieth	3180 North Star Rd	Upper Arlington	OH	43221	614-457-9511
KC3AM	Dave Stepnowski	735 W Birchtree Ln	Claymont	DE	19703	
AH2AR	Dave Pelaez	1348 Leaf Tree Lane	Vandalia	OH	45377	937-264-9812
W8ARE	Terry Meredith III	6070 Langton Circle	Westerville	OH	43082-8964	
K9BIF	Charlie Short	415 West Pike Street	Goshen	IN	46527-0554	
VK3BFG	Peter Cossins	14 Coleman Road	Melbourne	Au	03152	
N9BNN	Michael Glass	6836 N. Caldwell Rd	Lebanon	IN	46052	
WB8CJW	Dale Elshoff	8904 Winoak Pl	Powell	OH	43065	614-210-0551
N8COO	C Mark Cring	2844 Sussex Place Dr.	Grove City	OH	43123	614-836-2521
N8CXI	Garry Cotter	2367 Northglen Drive	Columbus	OH	43224	
N3DC	William Thompson	6327 Kilmer St	Cheverly	MD	20785	301-772-7382
K8DMR	Ron Fredricks	8900 Stonepoint Ct	Jennison	MI	49428-8641	
W8DMR	Bill Parker	2738 Florbunda Dr	Columbus	OH	43209	
WA8DNI	John Busic	2700 Bixby Road	Groveport	OH	43125	614-491-8198
N8DUK	Ron Reynolds	2173 Noe Bixby Rd	Columbus	OH	43232-4131	
WB8DZW	Roger McEldowney	5420 Madison St	Hilliard	OH	43026	614-405-1710
KB8EMD	Larry Baker	4330 Chippewa Trail	Jamestown	OH	45335-1210	
N8FRT	Tom Flanagan	6156 Joliff St.	Galloway	OH	43119	
W8FZ	Fred Stutske	8737 Ashford Lane	Pickerington	OH	43147	
WA8HFK,KC8HIP	Frank & Pat Amore	P.O. Box 2252	Helendale	CA	92342-2252	760-503-8106
W8KHP	Allen Vinegar	2043 Treetop Lane	Hebron	Ky	41048	
WA8KKN	Chuck Wood	5322 Spruce Lane	Westerville	OH	43082-9005	614-523-3494
WB9KMO	Rod Fritz	8334 E. Culver Street	Mesa	AZ	85207	
WA8KQQ	Dale Waymire	225 Riffle Ave	Greenville	OH	45331	937-548-2492
WB8LGA	Charles Beener	2540 State Route 61	Marengo	OH	43334	
W8MA	Phil Morrison	154 Llewellyn Ave	Westerville	OH	43081	
KA8MID	Bill Dean	2630 Green Ridge Rd	Peebles	OH	45660	
N8NT	Bob Tournoux	3569 Oarlock Ct	Hilliard	OH	43026	614-876-2127
W8NX, KA8LTG	John & Linda Beal	5001 State Rt. 37 East	Delaware	OH	43015	740-369-5856
KB8OFF	Jess Nicely	1888 Woods Drive	Beavercreek	OH	45432	
N00BG	Jim Conley	33 Meadowbrook C C Est	Ballwin	MO	63011	
W6ORG,WB6YSS	Tom, Maryann O'Hara	2522 Paxson Lane	Arcadia	CA	91007-8537	626-447-4565
N8OCQ	Bob Hodge Sr.	3750 Dort Place	Columbus	OH	43227-2022	
AE6QU	Ron Phillips	2227 Via Puerta unit N	Laguna Woods	CA	92637	
WA8RMC	Art Towslee	438 Maplebrooke Dr W	Westerville	OH	43082	614-891-9273
W8RUT,N8KCB	Ken & Chris Morris	2895 Sunbury Rd	Galina	OH	43021	
KB8RVI	David Jenkins	1941 Red Forest Lane	Galloway	OH	43119	614-853-0679
W8RWR	Bob Rector	135 S. Algonquin Ave	Columbus	OH	43204-1904	614-276-1689
W8RXX, KA8IWB	John & Laura Perone	3477 Africa Road	Galena	OH	43021	614-579-0522
WA6RZW	Ed Mersich	34401 Columbine Trl West	Elizabeth	CO	80107	
WA6SVT	Mike Collis	PO Box 1594	Crestline	CA	92325	
KD8TIZ	Bob Holden	5161 Goose Lane Rd	Alexandria	OH	43001-9730	614-562-8441
K8TPY, K8FRB	Jeff & Dianna Patton	3886 Agler Road	Columbus	OH	43219	
NR8TV	Dave Kibler	243 Dwyer Rd	Greenfield	OH	45123	937-981-1392
KB8UWI	Milton McFarland	115 N. Walnut St.	New Castle	PA	16101	
WA8UZP	James Reed	818 Northwest Blvd	Columbus	OH	43212	614-297-1328
KB9VGD	Gary Oaks	472 Storle Ave	Burlington	WI	53105-1028	
KC8WRI	Tom Bloomer	PO Box 595	Grove City	OH	43123	
AA8XA	Stan Diggs	2825 Southridge Dr	Columbus	OH	43224-3011	
AC8XP,KE8GTT,KE8HPA	Troy,Seamus Bonte	5210 Smothers Road	Westerville	OH	43081	
AC8YE	Larry Howell	1163 Cloverknoll Ct	Columbus	OH	43235-4008	
KB8YMQ	Jay Caldwell	4740 Timmons Dr	Plain City	OH	43064	
KC8YPD	Joe Ebright	3497 Ontario St	Columbus	OH	43224	
KD8YYP	Anna Reed	818 Northwest Blvd	Columbus	OH	43212	
WB8YTZ	Joe Coffman	233 S. Hamilton Rd	Gahanna	OH	43230-3347	
N8YZ	Dave Tkach	2063 Torchwood Loop S	Columbus	OH	43229	614-882-0771
W8ZCF	Farrell Winder	6686 Hitching Post Ln.	Cincinnati	OH	45230	513-218-3876

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## ATCO MEMBERSHIP INFORMATION

Membership in ATCO (Amateur Television in Central Ohio) is open to any licensed radio amateur who has an interest in amateur television. The annual dues are \$10 per person. Additional members within an immediate family and at the same address are included at no extra cost.

ATCO publishes this Newsletter quarterly in January, April, July, and October. It is sent to each member without additional cost. All Newsletters are sent via Email unless the member does not have an internet connection. Dues payments are as of the date paid and will expire on the same month/year on the due date year.

Your support of ATCO is welcomed and encouraged.

Membership expiration notices will be sent out via Email starting 30 days prior to expiration date.

**NOTE:** Dues records on your individual portion of the ATCO website are listed as the date money is received and shows due one year from that date.

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## ATCO MEMBERSHIP APPLICATION

RENEWAL ☐ NEW MEMBER ☐ DATE \_\_\_\_\_

CALL \_\_\_\_\_

OK TO PUBLISH PHONE # IN NEWSLETTER YES ☐ NO ☐

HOME PHONE \_\_\_\_\_

NAME \_\_\_\_\_

INTERNET Email ADDRESS \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_ - \_\_\_\_\_

FCC LICENSED OPERATORS IN THE IMMEDIATE FAMILY \_\_\_\_\_

COMMENTS \_\_\_\_\_

ANNUAL DUES PAYMENT OF \$10.00 ENCLOSED CHECK ☐ MONEY ORDER ☐

Make check payable to ATCO or Bob Tournoux & mail to: Bob Tournoux N8NT 3569 Oarlock CT Hilliard, Ohio 43026. Or, if you prefer, pay dues via the Internet with your credit card. Go to [www.atco.tv](http://www.atco.tv) and fill out the "pay ATCO dues" section. Alternately, you can use the ATCO web site [www.atco.tv/PayDues.aspx](http://www.atco.tv/PayDues.aspx) directly. Credit card payment is made through "PayPal" but you DO NOT need to join PayPal to send your dues. Simply DO NOT fill out the password details and there will be no "PayPal" involvement.

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## ATCO CLUB OFFICERS

President: Art Towslee WA8RMC

V. President: Ken Morris W8RUT

Treasurer: Bob Tournoux N8NT

Secretary: Mark Cring N8COO

Corporate trustees: Same as officers

Repeater trustees: Art Towslee WA8RMC

Ken Morris W8RUT

Dale Elshoff WB8CJW

Statutory agent: Stan Diggs AA8XA

Newsletter editor: Art Towslee WA8RMC

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## NEW MEMBER(S)

Let's welcome the new members to our group! If any of you know anyone who might be interested, let one of us know so we can flood them with information. New members are our group's lifeblood so it's important we aggressively recruit new faces.

No new members this time.

ATCO Newsletter  
c/o Art Towslee -WA8RMC  
438 Maplebrooke Dr. West  
Westerville, Ohio 43082

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**FIRST CLASS MAIL**

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**REMEMBER...CLUB DUES ARE NEEDED.  
CHECK THE  
MEMBERS PAGE OF ATCO WEBSITE FOR THE EXPIRATION DATE.  
SEND N8NT A CHECK OR USE PAYPAL IF MEMBERSHIP IS EXPIRED.**

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